Pam (*440)
RCGS

NORTHWEST TERRITORIES

Geographical Aspects

THE ROYAL CANADIAN GEOGRAPHICAL SOCIETY

LIBRARY
BOREAL INSTITUTE

POLAR
PAM
6173
POLARPAM

Cutting paths through the interior plains, the Mackenzie and Arctic Red Rivers meet about twenty miles from Mackenzie Delta. At the junction of these two rivers is the settlement and trading post of Arctic Red River. Geographical Branch

Waterfalls mark the surface of the Bell limestone plateau in south-western Southampton Island, District of Keewatin. Geographical Branch

(*440)

The Northwest Territories

Geographical Aspects

by N. L. NICHOLSON

THE NORTHWEST Territories are immense. They not only include 1,253,438 square miles of land, but also the 321,000 square miles of Hudson and James Bays, as well as Hudson Strait, Foxe Basin and other Canadian waters to the north. The land area alone is greater than that of Ontario, Quebec and the Atlantic Provinces combined, while the water area is at least twice the area of Manitoba. With such a tremendous area, the Northwest Territories not only embrace the most northerly parts of Canada; they also extend farther south than the latitude of Saskatoon or Edmonton. Vast areas also mean great distances and the distance from Alert, Canada's northernmost settlement, on the north coast of Ellesmere Island, to the southern tip of James Bay is some 2,200 miles — equal to the airline distance from Toronto to Vancouver, while the distance from Aklavik, at the mouth of the Mackenzie River, to Resolution Island, at the entrance to Hudson Strait, is about 2,000 miles.

Yet, despite the fact that more than one-third of Canada's total area is included within the Northwest Territories, their total population is only 20,000, about the same as that of Stratford, Ontario. To understand this situation is to understand the geography of the Northwest Territories.

The Early Years

Parts of this vast domain have been known for a long time. By 1578, thirty-two years before the founding of Quebec, Martin Frobisher had made three voyages to Baffin Island, while less than twelve weeks after Shakespeare's death in 1616, Robert Bylot and William Baffin were making the first recorded landing by Europeans on the Queen Elizabeth Islands. They had already reached latitude 77°44′N., which was to be the most northerly point reached by anyone for the next two hundred and thirty-six years! These early voyages were all motivated by the concern of Europeans to find an easy sea-route to the Orient. Although Henry Hudson's last voyage of 1610-11 indicated a huge sea west of Hudson Strait, explorations by Button, Bylot and Baffin between 1612 and 1615, and by Foxe and James in 1631, showed that a land mass blocked the western side and ice impeded progress into the openings of the north. But the way was opened into the heart of an empire of furs and forests, and the Hudson's Bay Company was founded in 1670 to reap the economic benefits of this discovery. By Royal Charter, the Governor and Company were to be "true and absolute lords" of the lands and seas about the Bay which were to be called "Rupert's Land".

Many of the employees of the Company penetrated the unexplored parts of Rupert's Land and even beyond. Of these, the best known was Samuel Hearne who, from 1770 to 1772, travelled from the Company's fort at Churchill to the mouth of the Coppermine River. His accounts and maps indicated the

In 1576-8 Martin Frobisher made three voyages to America in quest of a northwest passage. During these expeditions he discovered and explored the bay in Baffin Island which bears his name.

National Museum

When seen from the air, the Canadian Shield portion of the Northwest Territories presents an inhospitable and bleak appearance. Taken from an aeroplane over the District of Keewatin, this photograph shows barren grounds characteristic of this region. R.C.A.F

great size of the Arctic mainland and were the first reports about the western Arctic. When the Northwest Company was formed, many of its personnel also shed light on the geography of the mainland — Peter Pond, for example, through his 1787 map of Western Canada; and Mackenzie who, in 1789, descended the river later named for him, to the Beaufort Sea.

But the search for a northwest passage continued. In the first half of the nineteenth century, Parry reached Melville Island and the north end of Foxe Basin; Franklin and Richardson explored the Arctic coast from the mouth of the Coppermine River to Mackenzie Delta, and Ross discovered Boothia Peninsula. It was in 1834 that George Back made his great crossing of the Arctic mainland from Great Slave Lake to Chantrey Inlet.

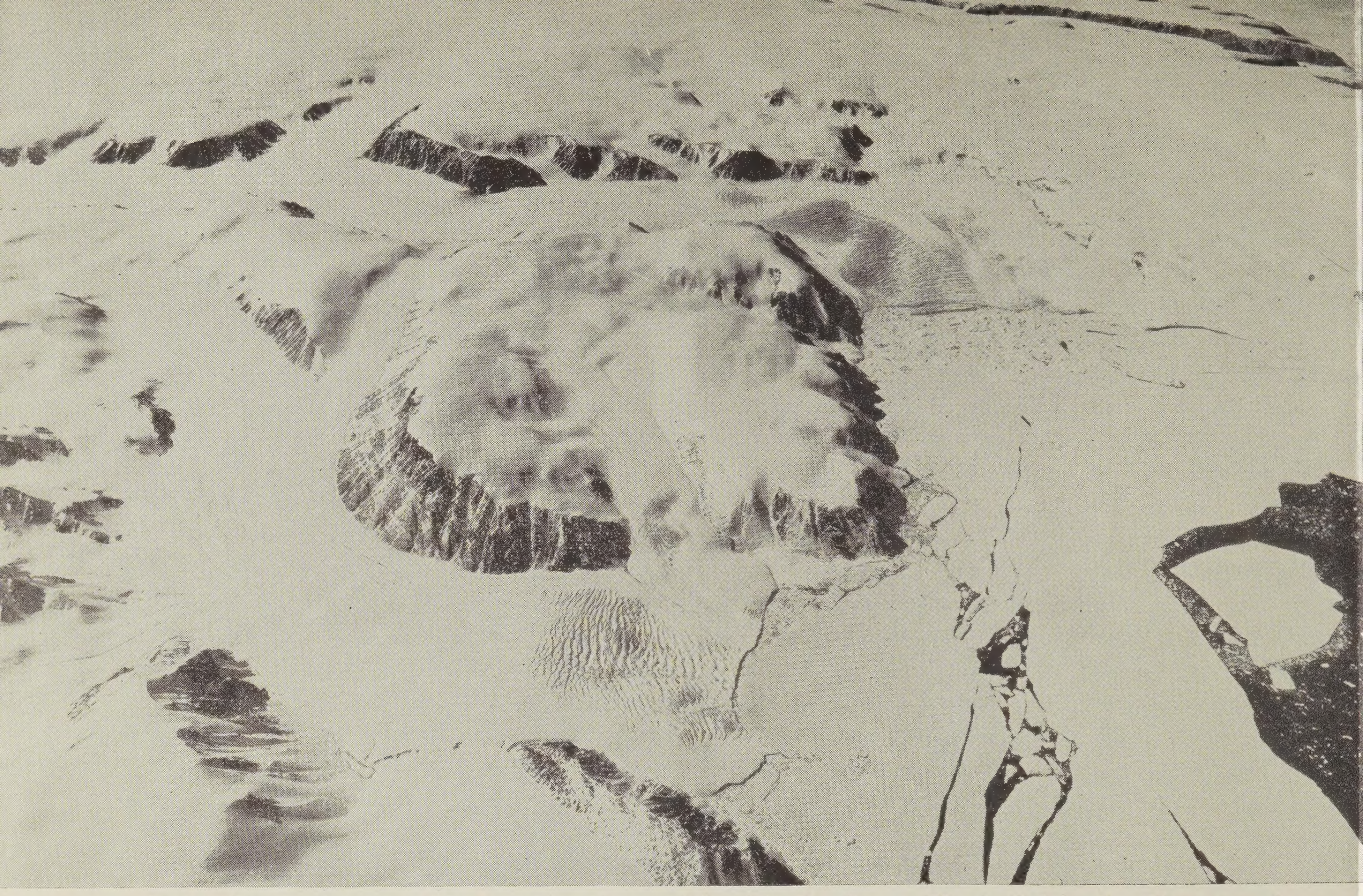
Then in 1845 came the tragic disappearance of the British Naval Expedition under Sir John Franklin. Yet this was to accomplish more than any other single event in making known the geography of much of the Northwest Territories, for well-organized search parties, amounting to some forty expeditions within the next decade, sailed and sledged thousands of miles in the search for the missing men. Penny, Austin, Ommaney, Kennedy and Belcher explored the inlets and water-ways off Parry Channel, from 1851 to 1852. They thus began the real penetration of the Queen Elizabeth Islands which was stimulated by M'Clure's explorations of 1850, during which he actually travelled over the Northwest Passage. Rae made three trips by land in the western area of Hudson Bay and Foxe Basin, while M'Clintock, working a little to the north of Rae's area, explored King William Island and completed the story of Sir John Franklin's last expedition with the discovery of its written records and relics.

All this exploration produced valuable geographical information concerning land masses, ice conditions, climate and living conditions. It also showed that there was no easy route through the Arctic islands. Yet further exploration and development continued, the impetus coming from three major sources: the whaling industry, the assault on the North Pole, and the efforts of the Government of Canada to maintain jurisdiction and bring law and order to the north. For almost one hundred years whaling vessels were to be found somewhere in the region. In the middle of the nineteenth century, many whalers hunted during the summers in Baffin Bay and Hudson Bay and wintered on their shores. Toward the end of the century they shifted to the western Arctic and explored much of the Beaufort Sea and its coasts.

After 1860, the largest remaining unexplored part of the Arctic lay north and west of Baffin Bay. Successive expeditions from the United Kingdom and the United States pushed farther and farther north in attempts to outline the land masses and explore toward the North Pole. Hall, in 1871, was the first to take a ship between Ellesmere Island and Greenland to the Arctic Ocean, reaching 82°11'N. Nares, in 1875, reached 83°20'N. and explored the north coast of Ellesmere Island. Two Norwegians also made notable contributions in this period. Between 1898 and 1902, Sverdrup found and mapped several new islands, including Axel Heiberg and the Ringnes Group — an area almost the size of Ceylon. Then in 1903-6 Amundsen navigated the Northwest Passage for the first time in history in the *Gjoa*. Finally, the Pole was attained by Peary in 1909.

For beauty of Arctic scenery few places excel Pangnirtung Fiord in eastern Baffin Island. Shown below are the desolate hills surrounding the fiord and a small Eskimo settlement. Not far distant is the settlement and trading post of Pangnirtung. Besides the trading post, which is the largest on the island, Pangnirtung has a post office, R.C.M.P. detachment, Anglican Church mission, hospital and federal school.

N.F.B.



Forbidding landscape of north-eastern Devon Island in the Queen Elizabeth Islands. This view, from across the Devon Ice-field, shows the north coast and Jones Sound. In the centre is the large Belcher Glacier which terminates near the coast in a steep-faced heavily crevassed section from which small icebergs and bergy bits are discharged. The underlying Precambrian rocks are seldom exposed except on cliff faces and valley walls. R.C.A.F.

In the meantime, in 1881, the Arctic Islands had been transferred to Canada by the United Kingdom and from that time Canada sponsored many expeditions to the Northwest Territories. One of the most notable was led by Vilhjalmur Stefansson; between 1913 and 1918, in addition to discovering Borden, Brock and Meighen Islands (some 2,000 square miles), this party brought back more accurate descriptions of the already known areas which they traversed. From this time onward, however, old-style exploration practically ceased. The use of aircraft and aerial photography has enabled the major land areas to be delineated and in the process has even shown the existence of new islands, such as the islands in Foxe Basin, covering about 6,000 square miles, which were not known with certainty until 1946.

Government

When Canadian Confederation came into being in 1867, all of what is now the Northwest Territories remained directly under the control of Great Britain. This control, however, gradually passed to the Government of Canada. Full title to "Rupert's Land and the North-Western Territory" was transferred to Canada in 1870, but this transfer covered only those territories that had formerly been controlled by the Hudson's Bay Company, and in 1881 the islands north of this area were officially transferred to the Federal Government. The whole of this tremendously large area was renamed "The North-West Territories". Gradually, parts of this were erected into provinces or separate territories. Manitoba was created in 1870; Yukon Territory in 1898, and Saskatchewan and Alberta in 1905. In 1912, Manitoba, Ontario and Quebec were extended northward so that it is only from that time that the Northwest Territories covered their present area. They are divided, for administrative convenience, into the three provisional Districts of Mackenzie, Keewatin and Franklin.

The Northwest Territories are governed by a Commissioner (who since 1921 has been by practice the Deputy Minister of the federal department responsible) under instructions given, from time to time, by the Governor-in-Council or the Minister of Northern Affairs and National Resources. He is assisted by a council of nine, four of whom are elected in the District of Mackenzie and five of whom are appointed by the Governor-in-Council. The Commissioner-in-Council has legislative powers respecting such matters as direct taxation, administration of justice, education and public health — generally speaking, the same responsibilities as those of a provincial government, except that the Territories do not have the power to borrow money and do not administer their natural resources, except wildlife. The Council meets in legislative sessions at least twice a year, one meeting being held at a point within the Northwest Territories and others at Ottawa, which remains the seat of government. Since 1953, the District of Mackenzie has elected one member to the Federal Parliament.

The Land

The Northwest Territories are more than merely vast lands; they are also lands of infinite variety, much of the variety being a result of topography. The western and northern limits are guarded by mountains. In the west the boundary runs atop the Selwyn Mountains and the Richardson Mountains, skirting several peaks which exceed 9,000 feet in height, while in the east the mountain rim, although somewhat lower on Baffin Island, exceeds 10,000 feet in northern Ellesmere Island. From these highland rims the land for the most part slopes to the myriad channels which break the "Far North" into a multitude of islands. A score of these are larger than Prince Edward Island, while Baffin Island is almost as large as France, and Ellesmere and Victoria Islands are each larger than England and Scotland combined. Farther south the land drains to Hudson Bay and Foxe Basin.

But the descent from the mountains to the northern seas and straits is no gradual one. Surrounding Hudson Bay and Strait is the Canadian Shield — an immense stable block of ancient crystalline rocks, mostly granite. Except in the east, where these rocks rise high and mountainous, the Canadian Shield lacks hills of any size and for most of the area the local relief is rarely more than one hundred feet. Regardless of its height, however, the Shield, when seen from the air, presents a rugged and barren landscape. Yet it is not without variety, most of which has been produced by the geologically recent glaciations. In places, the glaciers roughened the surface into a "rock-knob" type of landscape, and the hollows between the "knobs" are now occupied by lakes of all shapes and sizes. Elsewhere, the landscape consists of a series of long, parallel ridges and valleys, all that remains after the work of the forces of erosion in areas of ancient folding. In places these valleys have become filled with water, producing striking finger-like inlets or lakes such as Christie Bay and McLeod Bay at

A glacier at Coutts Inlet, north-east Baffin Island. Baffin Island has an area of 183,810 square miles, is the largest island in Canada.
Geographical Branch

View looking south along the ridge of the southern extremity of the Camsell Range of the Franklin Mountains, District of Mackenzie. North Nahanni River (foreground) is joined by Ram River, leaving the picture at left. R.C.A.F

the eastern end of Great Slave Lake. In other places, the glacier deposited materials such as boulders, sand, silts or clay on the surface, in the form of sheets or in isolated heaps, and locally in the form of eskers which look like railway embankments running across the country for a hundred miles or so, and which mark the courses of streams that once flowed beneath the ice. The western edge of the Shield is characterized by large lakes. Indeed Great Bear Lake and Great Slave Lake are the largest lakes within Canada, with the exception of the Canadian portion of Lake Huron. Each is about half the size of Nova Scotia.

Between the Shield and the western mountains lies part of the interior plains of North America which, in their entirety, extend from the Gulf of Mexico to the Arctic Ocean. Within the Northwest Territories these plains are dominated by the Mackenzie River. In contrast to the rivers of the Shield, which are characteristically interrupted by rapids and falls, the Mackenzie system is one of the most magnificent navigable water-ways in the world. It is without a break in navigation for the whole of its 1,400-mile course within the Northwest Territories. Impressive to the end, the river reaches the sea through the maze of channels in the delta which it has spread over several hundred square miles.

Climate

The Northwest Territories experience three types of climate — the "ice-cap" climate, the arctic climate, and the sub-arctic climate. The "ice-cap" climate is principally along the tops of the mountain ranges of the east, although there are some small patches on the western mountains. In these areas, permanently covered with ice and snow, the average monthly temperatures are always below 32° Fahrenheit.

But the "ice-cap" climate is relatively limited in extent so that, generally, the Northwest Territories are either arctic or sub-arctic. The boundary between these two types runs approximately from Aklavik to Rankin Inlet, which means that the south-western part of the Territories (essentially the Mackenzie Valley) is sub-arctic and the remainder arctic. In the arctic, the mean temperature of the warmest month, although above freezing, is never above 50°. Average winter temperatures are consistently low. Over the most northerly islands the mean temperature in January is below −30° Fahrenheit, and the mean monthly temperatures are below zero for the seven months of the year from October to April. Indeed, from November 11, 1948, to April 27, 1949, the daily high temperature at Eureka rose above zero on only three occasions! In the sub-arctic on the other hand, the average temperature *does* go above 50°, but only for three months at the most while the average January temperatures may be as low as −36°. Thus the sub-arctic is a region of short, cool summers and long, usually severe, winters.

But these simple definitions based on average temperatures give no idea of the climatic paradoxes that can occur in the Northwest Territories. Cool and short though the summers are, temperatures of over 100° have been recorded south of Great Slave Lake. This is in contrast to the lowest recorded temperature of 70° below

The hummocky land pattern is typical of the areas underlain by permafrost. Geographical Branch

zero on the western edge of the Territories.

But "coldness" is not merely a matter of temperature. We feel colder when the temperature is zero and there is a strong wind, than we do when the temperature is zero but there is hardly any wind. This has led to the concept of "wind chill" — a measurement of the rate at which exposed human flesh would cool—which can be calculated from the values of mean temperature and mean wind speed. Thus the mean annual wind-chill factor in the arctic portion of the Territories is more than 1,300 units (1,400 units is the point at which exposed flesh freezes) compared with less than 900 (between cold and very cold) in parts of the sub-arctic portion. In Toronto, Ontario, it is 713 (between very cool and cold).

The annual precipitation is slight in amount. Only in the southern portions does it exceed 15 inches a year, on the average; elsewhere it is more likely to be between 5 and 10 inches. At Eureka on Ellesmere Island, it is only 2.59 inches — the lowest average annual precipitation figure for any place in Canada. Generally the snowfall is also light — less than half the amount which falls on Montreal. Fortunately, light precipitation in combination with low temperatures ensures that the precipitation will not evaporate too rapidly. Thus the *efficiency* of the precipitation is relatively high, even though the amount is low.

The Plants and Animals

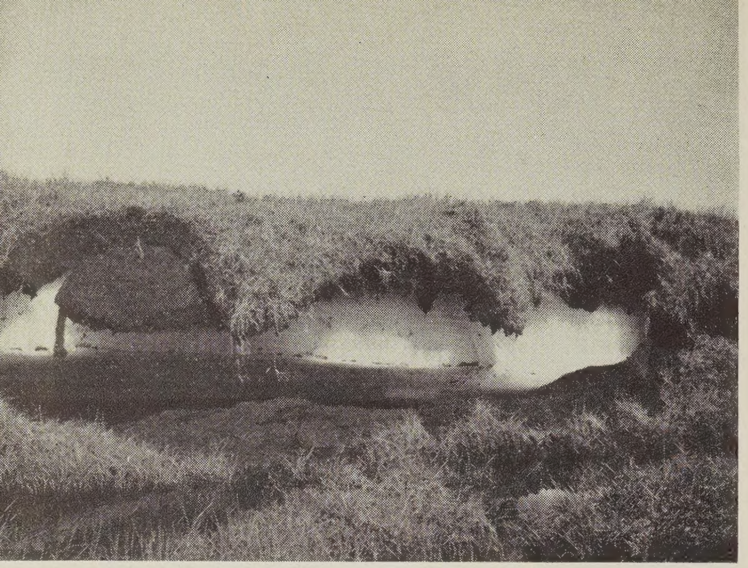
Nature has clothed the Northwest Territories in a variety of ways but, generally speaking, the arctic portion is non-forested and to its variety of low growing plants the name *tundra* has been applied. The sub-arctic, on the other hand, is a forested zone generally referred to as the *taiga* or the northern coniferous forest, or simply as the boreal (northern) forest. While it consists essentially of coniferous trees characterized by spruces, with a sprinkling of such deciduous trees as white birch and poplar, it varies considerably in composition and density from place to place. In the Mackenzie lowlands section, which occupies the low-lying plains of the Mackenzie River and the lower portions of the Liard, Peel and Great Bear Rivers, trees

Despite the rigorous climate the Northwest Territories support a varied plant life.

Upper centre:—Arctic willows in northern Ellesmere Island.

Lower centre:—Cotton grass vegetation near Coral Harbour, Southampton Island.

Bottom:—Arctic poppies. Geographical Branch photos



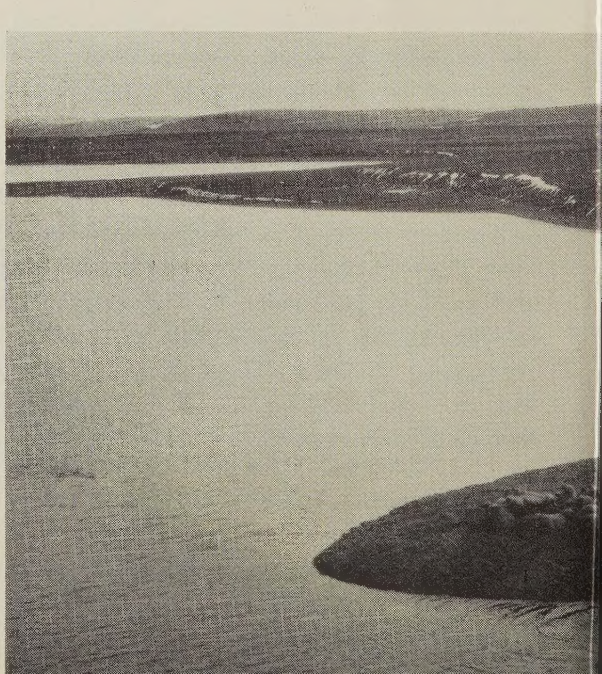
Tabular sheet of pure ground ice at the Brock River delta, near Letty Harbour, District of Mackenzie. Thaw ponds (centre) resulted from the melting of the ice. Geographical Branch

grow to a fairly good size. White spruce is well represented; black spruce and tamarack occupy the poorer drained areas and jack pine is found in the sandy areas. Alpine fir and lodge pole pine are more common in the western and north-western parts, particularly on the slopes of the mountains. In the north, the proportion of rock, muskeg and tundra gradually increases, for there is commonly no sharp break between the taiga and the tundra.

Similarly, within the tundra itself, the nature and amount of vegetation varies with soil, water conditions and exposure to wind.

Throughout the region, the climate has resulted in the development of permafrost—permanently frozen ground at a short distance below the surface. This prevents the surface waters from percolating downwards. Deposits of glacial debris form additional obstacles to the drainage, ponding back the surface waters to form shallow lakes, altering the courses of existing rivers and, in areas of gentle gradient, resulting in a waterlogged surface. There mosses and sedges are common, intermixed with streams, lakes, peat bogs and swamps. But small willows, a foot or two in height, and bushes often survive around the wet edges of marshes or in the more favourably sheltered places. Sandy areas on rocky lower slopes are often covered with heaths of lichens and grasses.

Because there are no real trees and few upright shrubs in the tundra, it is often described as barren. But one of the surprising features of



Above:—A typical sedgy tussock characteristic of ill-drained terrain.

Right:—A herd of walrus basks in the sun on a small spit in Gascoyne Bay, south-western Devon Island. Geographical Branch photos

Among the smaller animals that make their home in the north is the arctic hare.

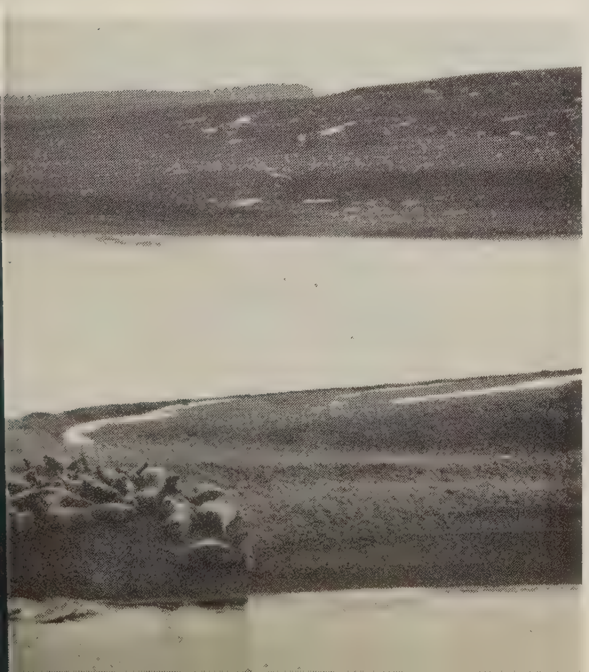
Photos on this page courtesy of Northern Affairs

this region is the relative wealth of the plant life. For every ton of mosses and lichens, it has been estimated that there are at least ten tons of flowering plants. Summer is too short for annual species to complete a life cycle in one season, so that almost all truly arctic plants are perennial and develop the next year's flowering buds before the onset of winter. However many areas that are simply bare bedrock, or disintegrated frost-shattered rock and glacial boulders, have no vegetative cover. This is typical of the mountainous areas and the tops of rocky ridges.

The flora of the Territories has an economic significance in that it is important to the region's wildlife, whose numbers and distribution can be traced directly to the distribution of the plant life. Consequently, the wildlife can be divided into that which dwells in the taiga and that of the tundra. One of the most remarkable animals is the musk-ox — *ovibos* or sheep-cow — which is found in small isolated bands on the arctic mainland and, with Peary's caribou, on the arctic pastures of the Queen Elizabeth Islands. Farther south the principal grazing animal is the barren-ground caribou, which also spreads southward into the northern part of the forested zone. The carnivorous animals of the tundra include the polar bear, the arctic wolf and the arctic fox, and among the smaller animals are the arctic hare, lemmings, squirrels and mice. In an area in such intimate contact with the sea, sea life too is important. All

Wind-blown and ungainly these two musk-ox were photographed on northern Ellesmere Island.

Polar bears making their way across the frozen expanse of Norwegian Bay, south of Axel Heiberg Island.



Rows of murre line cliffs of Digges Islands, at the western end of Hudson Strait.
Geographical Branch

marine mammals play an important role in the economy of the inhabitants of the Northwest Territories. The seals are perhaps of the greatest economic importance to the Eskimos, for from them they obtain food for themselves and their dogs, skins for clothing and tents, and fuel for cooking and light. There are several varieties of seals, the most important of which are Arctic ringed seal, Bearded seal and Harp seal. In addition, various species of whale and walrus are found.

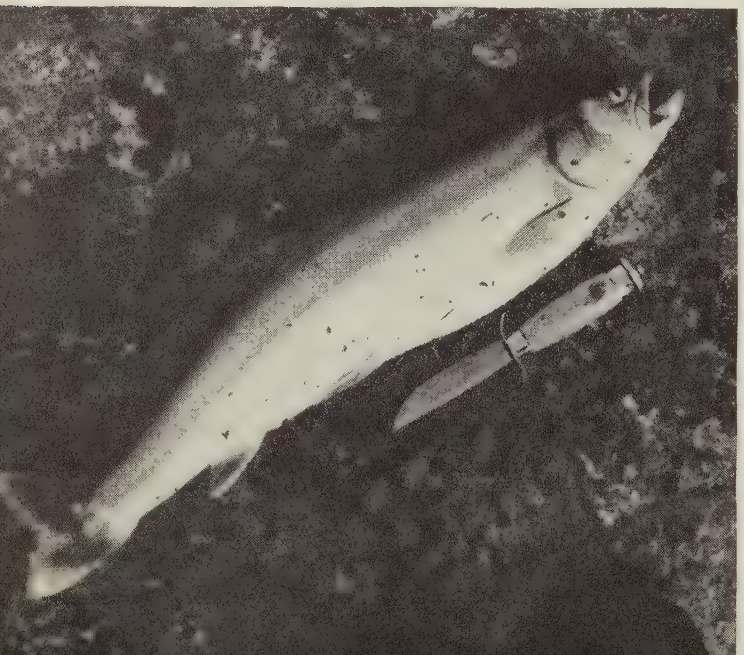
Fish are another important source of food in the Northwest Territories. The Arctic char is probably the principal of these, but the Atlantic salmon and various species of cod are present in different parts of the area. In addition, the freshwater lakes support whitefish, lake trout, pike, inconnu and herring. The Greenland shark has potential value for its tough tannable skin and its liver oil.

Birds are common in the Arctic, particularly in the summer season. Some, like owls, ravens and some ptarmigan make the tundra their permanent home. Others, like the whistling swan and several species of geese and other water fowl, choose to summer in the region. They go north to breed and return south when the nesting season is over.

The boreal forest similarly supports a varied wildlife typified by the moose, which browse among the shrubs and low-growing trees, the woodland caribou and the wood buffalo. The larger carnivorous animals include the black bear and, in the west, the grizzly bear, the coyote, timber wolf and red fox. The smaller ones include the otter and wolverine. Six important fur-bearing mammals — the beaver, muskrat, mink, marten, fisher and linx — live only in the wooded sections.

In comparison with the southern parts of Canada, the Northwest Territories have few species of insects, but many of them breed in great numbers in the pools left on poorly drained terrain by the melting snows. Mosquitoes and black flies are the summer nuisances of the Territories and, although their numbers decrease as one goes northward, only in the Queen Elizabeth Islands can one be free of their bite. But bees, spiders and even butterflies are found as far north as the land extends.

Centre:—An Arctic tern alights on its nest on the rocky shore of Ellesmere Island.



Left:—A fine Arctic char.
Photos courtesy Northern Affairs and J. A. Thomson

The People

When the Northwest Territories assumed their present size in 1912, their population was just over 6,000. Today the population is about 20,000. While in total this is about as many people as there are in Prince Albert, Saskatchewan, or Medicine Hat, Alberta, the proportional increase in forty-four years has been some 200 per cent — a faster *rate* of growth than any of the provinces except British Columbia. Of the 20,000 people about 8,000 are Eskimos, 4,500 are Indians, and 7,500 whites.

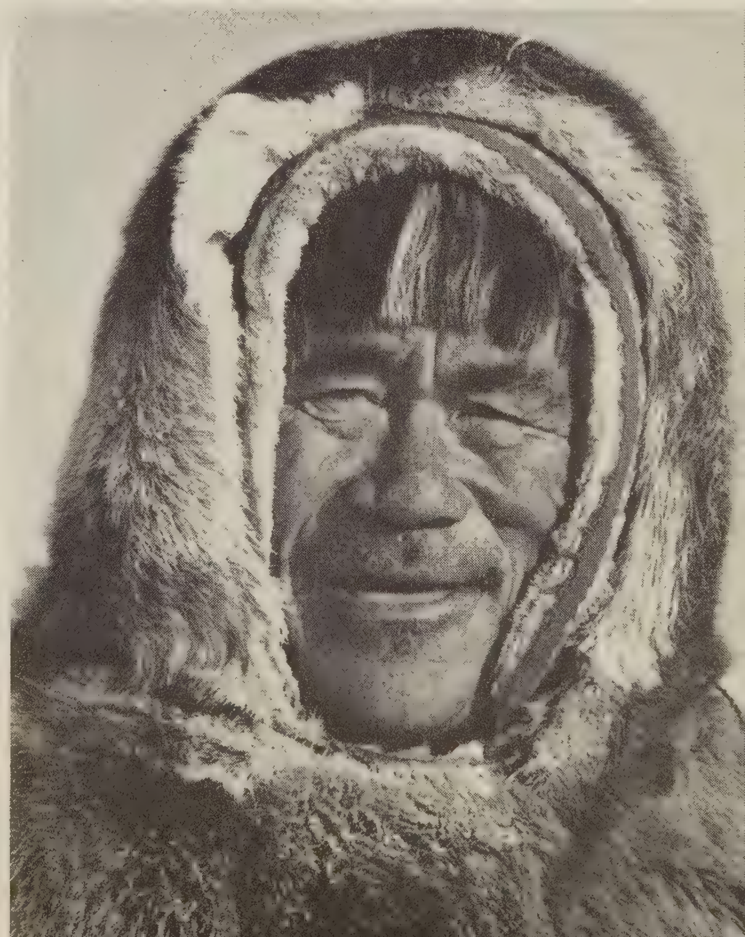
The Eskimos are "at home" in the true Arctic, or tundra, except in the far-northern Queen Elizabeth Islands which were uninhabited within historic times, until very recently. The Indians, on the other hand, are essentially forest dwellers and their culture is adapted to the conditions of the taiga. However, there are differences within both the Eskimos and Indians, depending upon the area of the Northwest Territories which they inhabit. These differences were much more recognizable in the past than they are today. Under the influence of the ways of life of southern Canada, the indigenous customs and habits of the Eskimos and Indians either have disappeared or are rapidly changing.

However, four groups of Eskimos have been recognized. The Central Eskimo, who are the natives of Baffin Island and Foxe Basin, correspond most closely to the popular idea of the Eskimo people. During the summer they traditionally live in tents of sealskin or caribou-skin, although today most of the tents are likely to be made of canvas. They live on seals, white whales, fish, and sometimes the walrus, and make occasional trips inland to hunt caribou in the fall. During the winter they live in the traditional hemispherical snow-house. For transportation they developed the umiak, a boat large enough to transport entire families and their possessions from one hunting ground to another, but in recent times this has largely been replaced by motorized vessels and whale boats. The kayak, or small hunting boat, accommodates only one person.

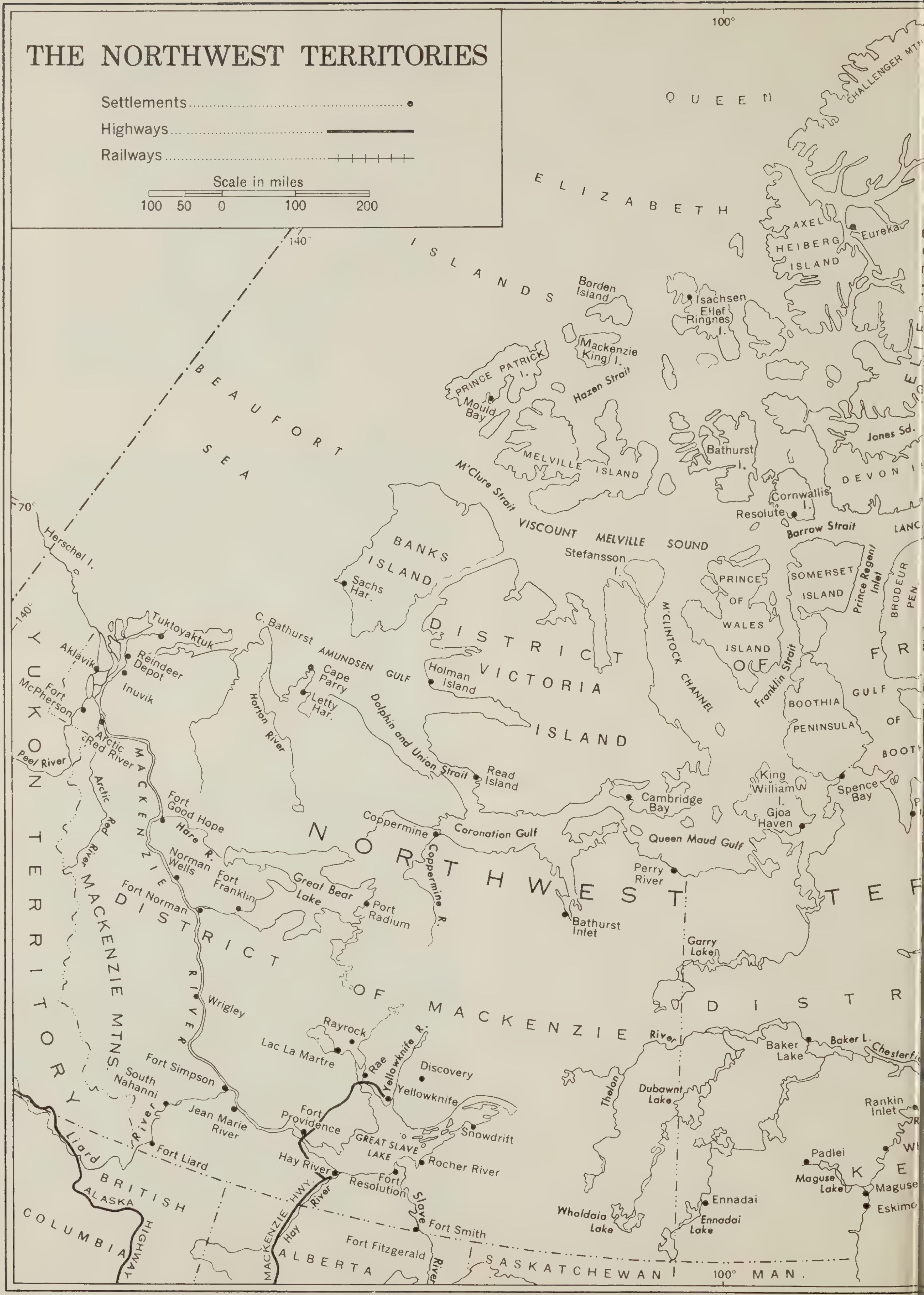
The Caribou Eskimo, however, who are found on the mainland of the District of Keewatin, did not hunt sea mammals, but depended mainly on caribou and inland fish for their livelihood. In this respect they were like the Indians to the south, yet their clothing was typically Eskimo and their winter igloos were snow-houses which were not built by any Indian tribe.

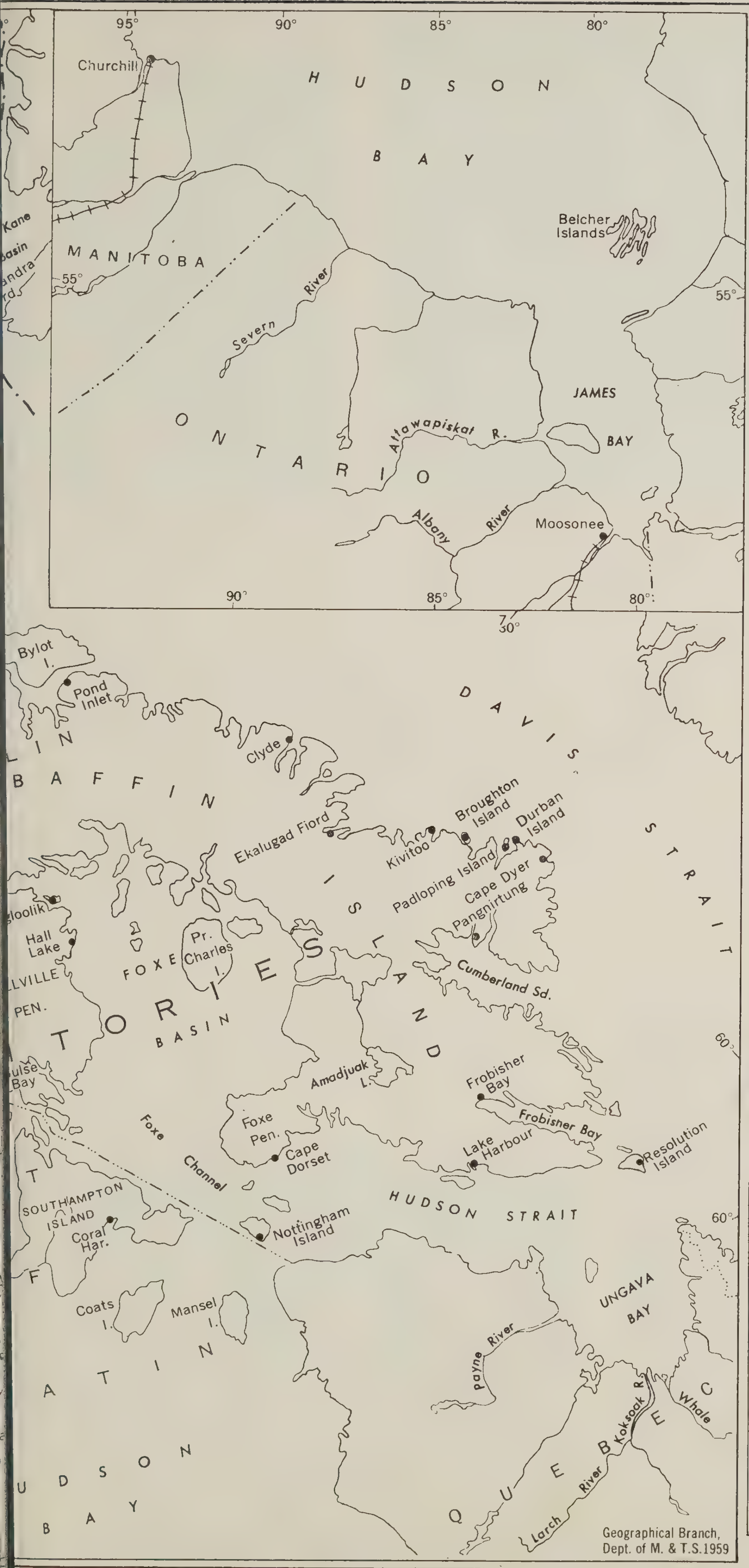
West of the Caribou Eskimos are the Copper Eskimos. Their culture lacked certain elements, such as the large open travelling boat, found among the Central Eskimos. This is also true of the Mackenzie Eskimos, but what distinguished this fourth group is that they used, not a snow-house, but a cabin of driftwood and turf as their winter igloo.

Although the Indians of the Northwest Territories all belong to the Athapaskan linguistic family, they have been divided into a number of tribes — the Kutchin, Hare, Nahani, Yellowknife, Dog-Rib, Slave and Chipewyan. Each tribe defined a number of bands with very similar customs and closely connected by intermarriage and common interests, but it did not imply any coherent organization. Caribou, moose, beaver and fish were the most important sources of food, for the Indians hunted with bows and arrows and spears, or trapped. Caribou were driven in the winter into pounds and

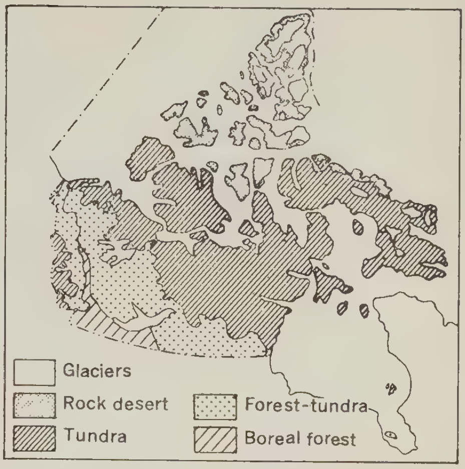


Swathed in caribou-skin Old Serko, a Padleimiut Eskimo from the District of Keewatin, grins cheerfully for photographer Richard Harrington. He wears two suits of skin, one with the hair turned in, the other with the hair turned out. The southernmost of four tribes of Caribou Eskimos, the Padleimiuts depended on caribou as their chief source of livelihood.

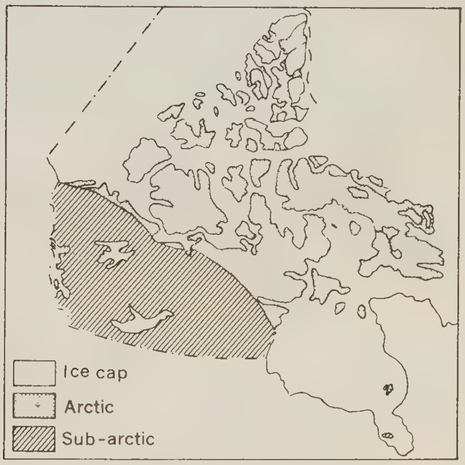

THE NORTHWEST TERRITORIES
Settlements
Highways
Railways
Scale in miles
100 50 0 100 200
100°
140°
70°
140°
QUEEN ELIZABETH ISLANDS
CHALLENGER MTN
AXEL HEIBERG ISLAND
Eureka
Borden Island
Isachsen
Ellef Ringnes I.
Mackenzie King I.
Hazen Strait
PRINCE PATRICK I.
Mould Bay
MELVILLE ISLAND
Bathurst I.
Jones Sd.
DEVON I
Cornwallis I.
Resolute
Barrow Strait
LANC
BEAUFORT SEA
M'Clure Strait
VISCOUNT MELVILLE SOUND
Stefansson I.
BANKS ISLAND
Sachs Har.
PRINCE OF WALES ISLAND
SOMERSET ISLAND
Prince Regent Inlet
BRODEUR PEN.
M'CLINTOCK CHANNEL
Franklin Strait
Herschel I.
Tuktoyaktuk
Reindeer Depot
Aklavik
Inuvik
Fort McPherson
C. Bathurst
AMUNDSEN GULF
Cape Parry
Letty Har.
Holman Island
DISTRICT OF
VICTORIA ISLAND
BOOTHIA PENINSULA
GULF OF BOOTH
Horton River
Dolphin and Union Strait
Read Island
Cambridge Bay
King William I.
Gjoa Haven
Spence Bay
Arctic Red River
Peel River
YUKON TERRITORY
MACKENZIE
Arctic Red River
Fort Good Hope
Hare R.
Coppermine
Coronation Gulf
Queen Maud Gulf
Perry River
Norman Wells
Fort Franklin
Great Bear Lake
Port Radium
Coppermine R.
NORTHWEST TERRITORIES
Bathurst Inlet
Fort Norman
DISTRICT OF MACKENZIE
MACKENZIE MTNS.
Garry Lake
River
Wrigley
Rayrock
Lac La Martre
Rae
Yellowknife R.
Discovery
Yellowknife
River
Baker Lake
Baker L.
Chesterfi
DISTR
Fort Simpson
South Nahanni River
Jean Marie River
Fort Providence
Thelon
Dubawnt Lake
Rankin Inlet
GREAT SLAVE LAKE
Snowdrift
Rocher River
Padlei
Maguse Lake
Maguse
KE
Liard
Fort Liard
Hay River
Fort Resolution
Slave River
Ennadai
Ennadai Lake
Wholdaia Lake
Eskimo
BRITISH COLUMBIA
ALASKA HIGHWAY
MACKENZIE HWY.
Hay River
Fort Smith
Fort Fitzgerald
ALBERTA
SASKATCHEWAN
100°
MAN.



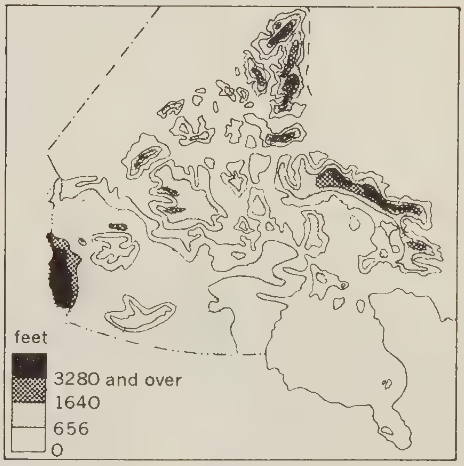
Geographical Branch,
Dept. of M. & T.S.1959



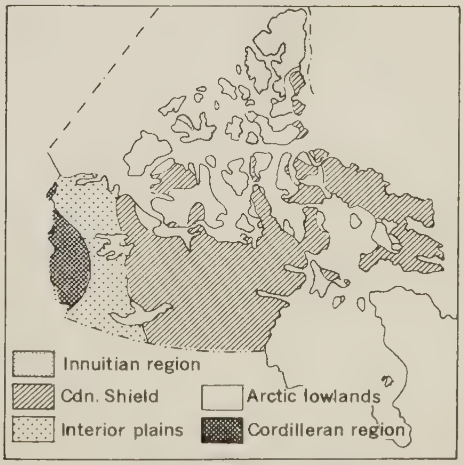
NATURAL VEGETATION



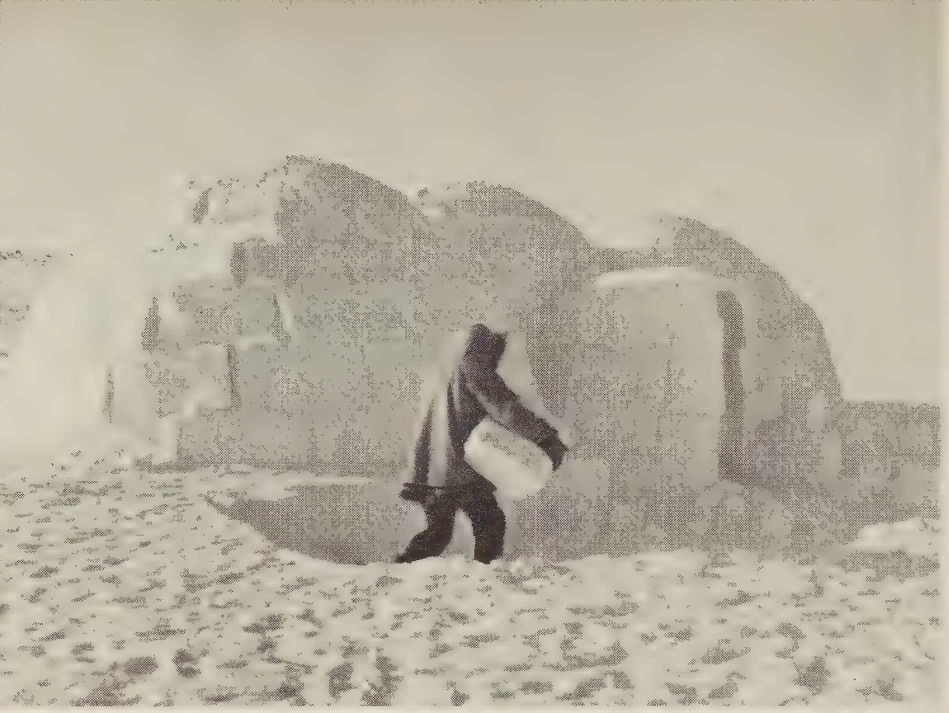
CLIMATIC REGIONS



RELIEF



PHYSIOGRAPHIC REGIONS

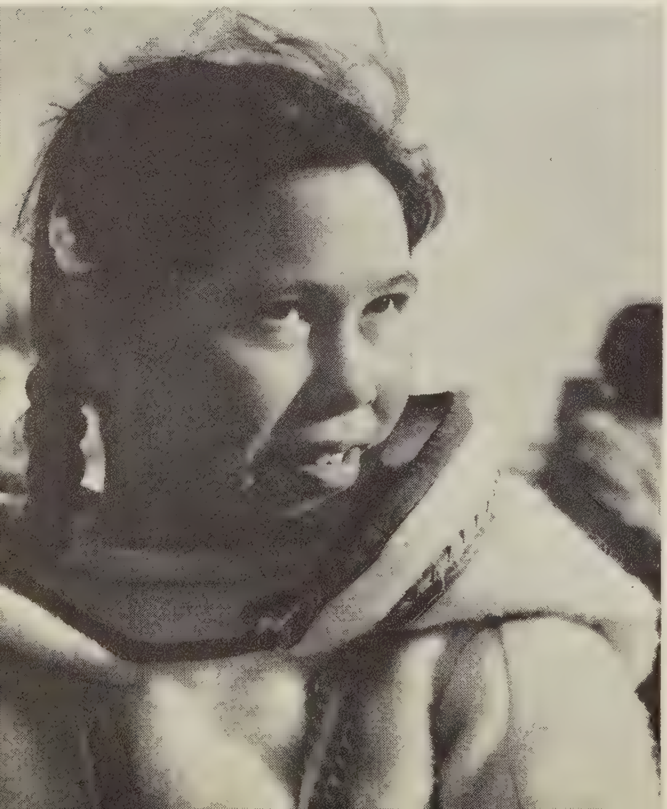


The hemispherical snow-house traditionally associated with Canadian Eskimos is still used by some of them during the winter months. A less elaborate structure than the one above might take an experienced builder an hour to erect. This ceremonial snow-house was erected at Tuktoyaktuk, District of Mackenzie. Northern Affairs

Inside a snow-house a cheerful fa

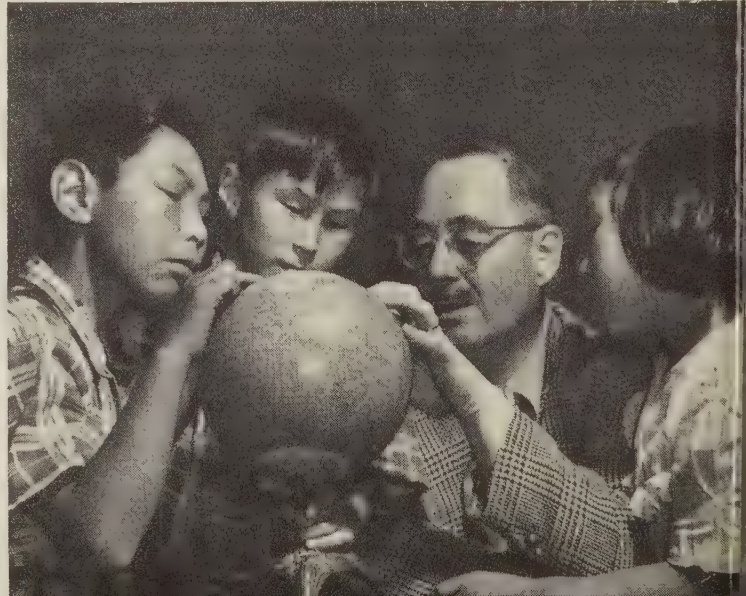
killed, or in the summer, into lakes or rivers where they were speared from canoes. Every Indian family owned a canoe covered with spruce or birch-bark, or sometimes with moosehide. In the winter toboggans were used for carrying possessions, while snow-shoes made individual movement possible over soft snow. But many of the customs have long since disappeared. Even the art of building bark canoes is rapidly dying out.

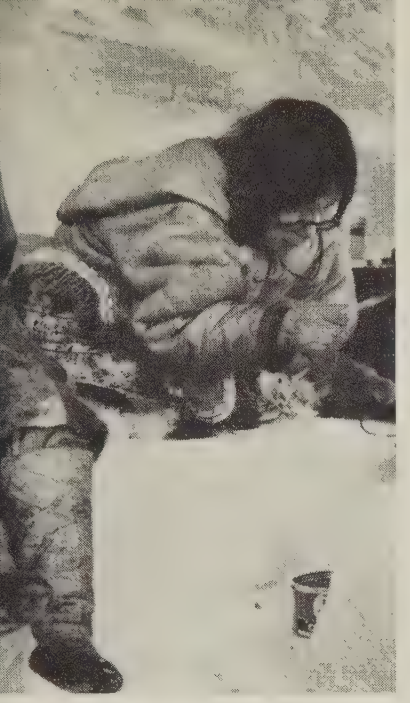
The Indians and Eskimos have little contact with each other except along the tundra-taiga boundary. Where this boundary approaches the coast, as it does in the lower Mackenzie Valley, the mixture of races is most apparent, and it is not uncommon to find four languages — English, French, Eskimo and Loucheux (an Indian dialect) — in use. The Indians and Eskimos do, however, have some things in common. They live in small settlements and, at present, depend for their livelihood largely on hunting, trapping and fishing.



Eskimo, Indian and white children have a lesson in geography at the All Saints' School at Aklavik, at the mouth of the Mackenzie River. At left, *Evee, an attractive Eskimo girl from Pangnirtung on the east coast of Baffin Island, typifies healthy young generation of Eskimos.*

Photos by N.F.B. (left) and George Hunter





ring and time for tea to be served.
N.F.B.

With the advent of spring on northern Baffin Island, the rocky beaches start to reappear and the snow melts on the slopes of the mountains. It is time now to change from the snow-house to the canvas tent.
Northern Affairs

The problems of these communities are twofold. Their traditional economy is precarious and will remain so until it is supplemented or their means of livelihood is changed. Associated with this is the fact that, with increasing activity in the Northwest Territories resulting from defence developments, scientific research and mineral prospecting, the indigenous people are becoming acutely aware that another way of life is available to them, and their former pattern of life is being disrupted. In their growing acceptance of the white man's tools, methods and tastes, they are losing their familiarity and mastery of the native skills which enabled them to survive in a harsh environment. Further, with modern health services, family allowances and other benefits, the population is increasing. The first contacts with white man brought epidemics of small-pox, measles, influenza and typhus throughout the eighteenth and nineteenth centuries and the total Canadian Eskimo population, which was estimated at 22,500 in the pre-contact period, was reduced to some 7,000 by 1921. Now they number about 11,000. Consequently, 65 per cent of the Eskimo population is now under twenty-five years of age and the Indian population is almost as youthful, with 56 per cent under twenty-five years of age. Thus the old means of livelihood are becoming less and less adequate for a steadily increasing number of people. However, it is realized that relief should be only a temporary expedient until the long range and much more difficult efforts to assist the natives in adjusting to the changing cultural environment are successful.

There are white people at almost every permanent settlement in the Northwest Territories, though almost half of the 7,500 are in

Work to be done by all. This Eskimo lad carries medical supplies received from a Canadian government patrol ship anchored off Pangnirtung, Baffin Island. A government patrol vessel visits the outpost once a year and its arrival is greeted with much excitement by the inhabitants. N.F.B.

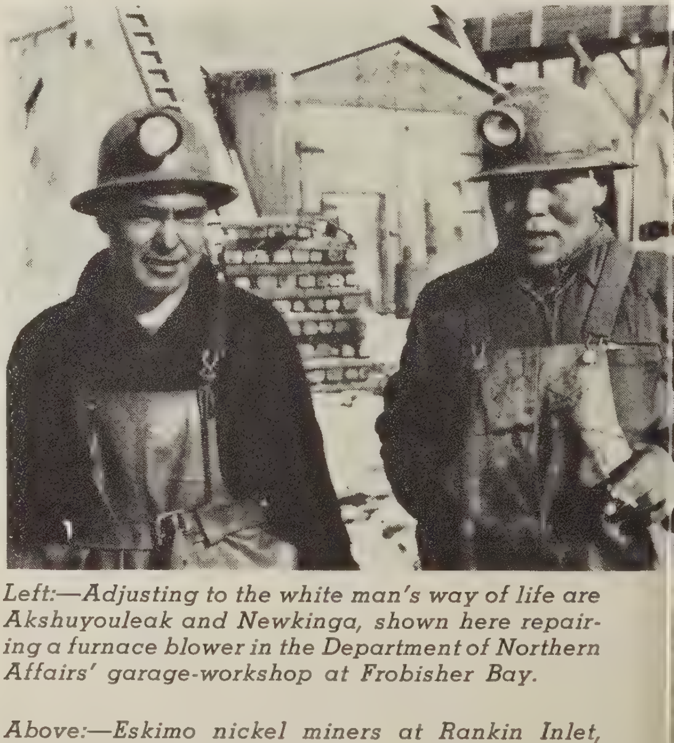
A prime white fox pelt is admired by an Eskimo trapper and his son. Furs led to the first settlements and provided the Eskimo with most of his income. Today, the industry is declining and fluctuating prices make it a precarious one. The Eskimo is further attracted to wage employment where he is assured a better and more certain income.

the Yellowknife area. They are principally government officers, Royal Canadian Mounted Police officials, transportation company employees, missionaries, teachers, miners, radio technicians, traders and trappers.

Settlements

The settlements of the Northwest Territories are a direct response to the economic activities. They range in size from surveyed townsites to small groups of buildings around trading posts or weather stations. Of the eighty or so communities, by far the largest is Yellowknife. With its population of 3,500, it was literally founded on gold. Today, it has all the amenities of a town in southern Canada—an airport, six churches, public, separate and high schools, radio stations, a taxi service, hotels, restaurants, banks, drug stores and a tavern. It has motion picture theatres, publishes a weekly newspaper, and is an administrative centre. Its well-equipped forty-bed hospital, operated by the Canadian Red Cross Society, is designed to serve the Yellowknife mining region, although it is often the goal of "mercy flights" from points hundreds of miles away.

On the south side of Great Slave Lake there is but one comparable settlement, although its population barely exceeds 1,000. This is Fort Smith, just north of the Alberta-Northwest Territories boundary, which is the administrative centre for the District of Mackenzie.



Left:—Adjusting to the white man's way of life are Akshuyouleak and Newkinga, shown here repairing a furnace blower in the Department of Northern Affairs' garage-workshop at Frobisher Bay.

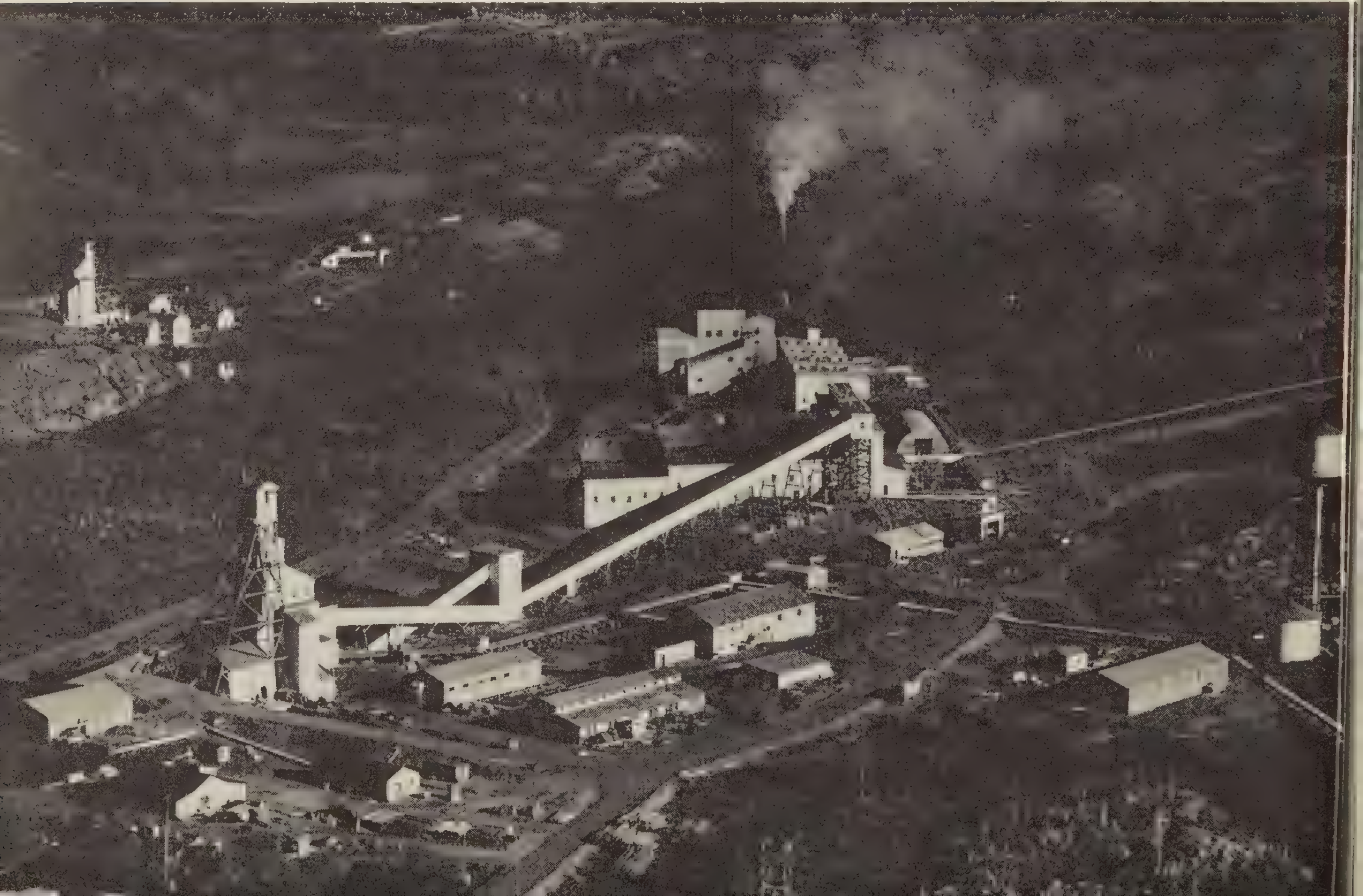
Above:—Eskimo nickel miners at Rankin Inlet, District of Keewatin. Northern Affairs photos

Aklavik, on the west channel of Mackenzie River, began as a trading post in 1912. Its chief source of income came from the valuable muskrat fur-trade. In recent years many of the town's facilities have been moved to Inuvik, on the east channel, because the nature of the land at Aklavik—a combination of permafrost and silt—discouraged further expansion. N.F.B

Yellowknife, on the north shore of Great Slave Lake, is the largest settlement in the Territories. It dates from 1934 when gold was discovered in the locality. In the foreground of the picture is the modern town of Yellowknife and in the background is the old town. George Hunter

Eldorado Mining and Refining Limited's uranium mine at Port Radium, District of Mackenzie. Port Radium owes its existence to the discovery of pitchblende in 1930 and its use as a source of radium and uranium. Northern Affairs

Gold mines and mill near Yellowknife. Giant Yellowknife Gold Mines Limited and Consolidated Mining and Smelting Company of Canada, Limited, operate mines in this area. George Hunter



Oil centre of Norman Wells, District of Mackenzie. Canada's northernmost oil refinery can be seen in the middle right of the picture. The community was developed after the discovery of oil in 1920.

George Hunter

Outside the Great Slave Lake area, the largest settlement is Aklavik, situated on the west channel of Mackenzie River, sixty-nine miles from the coast of the Beaufort Sea. If Yellowknife was founded on gold, then Aklavik was founded on furs. It too has schools, trading posts, hotels, churches and a radio station. But it lacks a suitable site for an airfield, so that many of the facilities are now in the process of being moved to the entirely new town of Inuvik, on the east side of the delta, where the permafrost situation will permit a permanent airfield to be constructed.

Norman Wells and Port Radium, which owe their existence to minerals, are much smaller centres in the Mackenzie District. Their modern facilities include hospitals operated by the mining companies. In the eastern Arctic, Frobisher Bay is being developed as the main settlement, especially as its airport has recently become an important centre for domestic as well as international air traffic, while Resolute, on Cornwallis Island, is becoming a transportation and communication centre for the Queen Elizabeth Islands.

The Surface Resources

The traditional and oldest economic activity is the fur trade. Furs led to the first settlements and the fur-trading posts of the Hudson's Bay Company still form the nucleus of scores of northern hamlets. But today the industry is declining and fluctuating prices for pelts make it a precarious one. It is now but the third "industry" of the Territories, for in recent years it has averaged in value only about $750,000, the fur catch being about 7 to 8 per cent of the Canadian total. Much the most valuable species is white fox, recently worth $300,000 a year, followed by muskrat, beaver, mink and marten. The decline in the muskrat take is notable. It used to be the most valuable part of the industry. More than three hundred thousand pelts a year were taken, about half of them from the Mackenzie Delta area. This was about 12 per cent of the entire Canadian muskrat catch. But

Resolute Bay, the settlement on Cornwallis Island, has weather, ionospheric, magnetic and seismic stations. Supplies landed here by barges are flown to weather stations in the Far North operated by the governments of Canada and the United States. Dept. of Transport

the prices of muskrat have sunk so low that many trappers do not feel it is worth trapping them any more.

The native fauna of the Northwest Territories also provides the basis for an infant fishing industry. These commercial fisheries had their start in 1945 around Great Slave Lake, which now yields close to 9 million pounds of fish annually — principally whitefish, trout and inconnu — about 90 per cent of it being marketed in the United States. In the 1957-8 season, the marketed value of the catch was $1,300,000 — almost twice the value of the fur catch. Recently commercial fishing for Arctic char has been tried on an experimental basis at Frobisher Bay, far to the east, and this hitherto northern delicacy is now available in some markets in southern Canada.

Forestry, too, is an industry capable of some expansion in the Mackenzie area, although the main demand for lumber will likely be to meet the needs of the region itself. Small sawmills have been operated for some time on the Slave River and on the Mackenzie River.

Water-power so far has been developed only on the Snare River and the Yellowknife River to supply the needs of the gold mining area. In general these resources are limited, compared with other parts of Canada, partly due to the low annual precipitation, but there are several notable potential sites such as Alexandra Falls on Hay River, 109 feet in height, and Virginia Falls on the South Nahanni River, which are 316 feet in height. There are a number of other potential power sites of varying capacities which could be developed should any mine come into production near them.

The Underground Resources

Though mining on a commercial scale came second in the history of the Northwest Territories, it is now easily first in importance, both in production and in prospects for future wealth. Minerals were an early lure to the area from the days when Martin Frobisher sought gold on Baffin Island in the sixteenth century, but most of the present-day knowledge of the mineral resources has been acquired since 1920 when oil in commercial quantities was discovered at what was later to become Norman Wells. Renewed interest resulted chiefly from the discovery of pitchblende and silver ores at Great Bear Lake in 1929 and 1930, and later discoveries of gold on the north shore of Great Slave Lake in 1933 and 1934 strengthened this interest.

Steady oil production started in 1932, and later the following year the first metal mine entered production, when concentration was started at the pitchblende-silver deposit on the east shore of Great Bear Lake. Silver concentrates were produced in the same area between 1936 and 1939. In September 1938, the first gold in the Territories was produced near what is now the town of Yellowknife. The value of mineral production has risen almost fantastically since 1932. At that time it amounted to $9,251; by 1958 it was nearly $25,000,000 — more than 2,500 times as great.

Gold is by far the most valuable single mineral and it all comes from the Yellowknife area. A new discovery, 150 miles to the north-east of the town, is being investigated and may aid in the further development of this area. Oil is produced at the Norman Wells field at approximately 350,000 barrels a year. This is refined locally and the products are shipped to points along the Mackenzie River and to mining districts on Great Bear and Great Slave Lakes. This situation may change before long for the current activities in exploring for oil and gas in the north-western part of the Territories constitute one of the most important single developments in recent years, and the investment in this search is expected to have profound effects in the future.

The only other major mineral deposit to be brought into production in recent years is the nickel at Rankin Inlet, but what may turn out to be the world's largest source of lead and zinc lies near Pine Point on Great Slave Lake, and awaits development. Other minerals are also known to exist. Lignite coal occurs at a number of places, such as Fort Norman, Aklavik, and

A Royal Canadian Air Force helicopter transports supplies in remote area of DEW line. Helicopters have opened up many otherwise inaccessible sites in the Arctic. National Defence

near Pond Inlet, and some has long been mined for local use; discoveries of graphite and mica near the south-east coast of Baffin Island have been known for more than three hundred and sixty years, during which time some mining has been done for both of them. Iron ores are found on Belcher and Nastapoka Islands in Hudson Bay, and considerable quantities of iron bearing formations exist in some areas on Baffin Island.

Transportation

The most difficult and urgent problem facing the development of the Northwest Territories is transportation. In the whole of the million and a half square miles there is no railway and no paved highway. Indeed, the only trunk road is the 81-mile portion of the Mackenzie Highway which runs from the Alberta border to Hay River, on Great Slave Lake. This road is twenty feet wide, is gravel surfaced and is open during the entire year. It is intended to extend this system around Great Slave Lake. Construction work on the first stage, 300 miles through Fort Providence and Rae to Yellowknife will be completed in 1960. The next stage will be the section from Yellowknife to Fort Reliance, with a spur northward to MacKay Lake. There are, of course, already local roads within the boundaries of local administrative districts or settlements, particularly in the vicinity of Yellowknife.

The cheapest form of commercial transportation is by water and in this respect parts of the Northwest Territories are admirably endowed by nature. The Mackenzie River and its tributaries, the Athabasca and Slave Rivers, provide a direct inland water transportation route for some 1,400 miles, while subsidiary routes on Great Slave Lake and Great Bear River and Lake total more than 800 miles. General freight services on the Mackenzie River system are maintained by three water transportation companies which operate barges to Tuktoyaktuk on the coast. The major handicap of this transportation route is that it is closed to navigation for eight or nine months out of the twelve because of climatic conditions.

The most famous salt-water route is the Northwest Passage. From 1940 to 1942, some thirty-five years after its first navigation by Amundsen, the R.C.M.P. schooner *St. Roch*, under the command of Staff-Sergeant H. A. Larsen, sailed the Passage from west to east. In 1944, Larsen navigated the Passage in the same ship in a single season, but this time he travelled from east to west. Even more recently, in 1954, the Canadian ice-breaker, H.M.C.S. *Labrador*, followed Larsen's route of 1944 and became the first deep-draft vessel to navigate the Passage. But the Northwest Passage is not now a commercial proposition. At the moment, the established routes follow the western arctic coast and the shores of Hudson Bay. Vessels operated by the Hudson's Bay Company connect the mouth of the Mackenzie at Tuktoyaktuk to provide freight services along the coast as far east as Spence Bay on Boothia Peninsula. The eastern parts of the Northwest Territories are served by the C.G.S. *C. D. Howe*. The Department of Transport also operates the ice-breaker *N. B. McLean* which aids vessels in the navigation of the Hudson Bay route. Supplies for the Queen Elizabeth Islands are taken by ship to Resolute or Thule, Greenland, and moved from there by air to their final destination. On occasion, ice-breakers have been able to push through to Eureka and Alert.

Of course, travel in the Northwest Territories is traditionally associated with the dog team, and probably no matter how much transportation is developed in the north, the dog sleighs will never become obsolete. The Eskimos, the Royal Canadian Mounted Police, scientists, trappers and prospectors still use them and will continue to do so. But for commercial purposes they are limited. Thirty years ago, a white man and two Eskimos took three years to travel from Frobisher, on Baffin Island, to Point Barrow in Alaska, by dog team. Today, the same trip can be made in one day, by air, and much has been done by air transportation to open up and service the Northwest Territories. Pontoon-equipped planes can serve practically all areas in summer, and for many winter flights pontoons may be replaced by skis. Scheduled air services operate from the south to Yellowknife, Port Radium and Coppermine, and also down the Mackenzie River to Aklavik and Inuvik, and across Labrador

Left:—Canadian government ice-breaker D'Iberville *makes its way through a jigsaw puzzle of ice in Norwegian Bay in the Queen Elizabeth Islands. Except for the Z-shaped break, this is a solid sheet of ice with dark spots being areas where the top layer of snow has melted.* Dept. of Transport

University of Alberta Library
0 1620 0338 8509

to Frobisher Bay. In addition chartered aircraft companies operate out of Fort Smith, Yellowknife, Hay River and Aklavik, and serve the eastern Territories from bases in northern Saskatchewan, Manitoba, Ontario, Quebec and the Atlantic Provinces.

Agriculture and Home Industry

Commercial agriculture in the Northwest Territories is, at the moment, so limited as to be virtually non-existent. Most food-stuffs are imported during the summer months, although fresh vegetables are grown and may be purchased at many of the settlements in the Dis-

Left:—These healthy strawberries were grown at the experimental sub-station at Fort Simpson, District of Mackenzie.

Lower left:—Cabbage plot at Aklavik, north of the Arctic Circle. In the background can be seen cold frames where cabbage plants were started before being set out in the open gardens.

Below:—A nice patch of potatoes in the village of Fort Smith, north of the Alberta boundary. The soil is sandy and requires manure and commercial fertilizer, but good crops are possible at this settlement.

F. S. Nowosad, Dept. of Agriculture